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VI. THE MOTOR MEMORY OF THE LEFT HAND

By LUCY ROWE and M. F. WASHBURN

The object of these experiments was to compare the ability to reproduce 'nonsense figures', by means of the left hand, with that shown by the right hand in similar tests. The method used was that employed by Binet to test motor memory, which may be found described on p. 397 of Titchener's *Instructor's Manual*, Qualitative. The observer's hand was guided by the experimenter along a nonsense figure of six lines, the eyes being closed. The figure was then reproduced from memory. In the course of the whole series of experiments, the same figures were used twice, once in testing the right hand and once in testing the left hand, but with a sufficient interval between, during which other figures were used, to prevent memory of the preceding test. The results were evaluated as follows. A line which was reproduced in the direction which it had in the copy was counted correct. Lines that were reversed, that is, directed to the left when they should have been to the right, were recorded under a separate heading, as were lines that were upside down. When the general direction, right, left, up or down, of a line was correct, but the angle made with the preceding line was too large or too small, the record was made under the head of "Error in angle". The results appear in the following table:

Obs.	RIGHT HAND.				LEFT HAND.			
	Correct.	Error in angle.	Rev.	U. d.	Correct.	Error in angle.	Rev.	U. d.
WO.	535	119	27	15	551	145	30	10
S.	322	14	21	6	349	15	47	4
H.	282	94	27	28	237	76	54	19
ST.	480	51	43		487		47	45
R.	173	14	36	8	181	19	17	12
L.	254	48	25	16	271	36	36	14
H.	414	106	31	10	465	77	41	19
P.	239	43	46	15	243	25	57	20

We had rather expected that the right hand would show superiority over the left hand in these tests. It will be seen from the table that in every case but that of observer H. the left hand gave a larger number of correctly reproduced lines. The introspection of our observers suggested a plausible explanation for this fact. We are so unaccustomed to performing accurate movements with the left hand that attention to its experiences in the giving of the copy is more strained and apparently more effective. The movements of the right hand, on the contrary, are more nearly automatic, and being less attended to are less accurately reproduced.

It might be expected also that the left hand would show a stronger tendency to reverse movements in reproducing them than the right hand. The figures show that this was the case with every one except observer R., though the difference between the hands was not very marked.

VII. A STUDY IN GUESSING

By MARIE STROH, A. MARGARET SHAW, and M. F. WASHBURN

The experiments to be described were suggested by those of Sidis,

described on pp. 168-171 of "The Psychology of Suggestion." Cards bearing printed letters or numbers were in Sidis's tests held at such a distance from the observer that they could not be read, and the observer was asked to guess the letter or number on the card shown. Sidis found that in a certain percentage of cases too large to be due to chance the guesses were correct, and argues that a secondary self, endowed with better powers of vision than the primary self, influenced the guessing.

Our own experiments fall into three series. In the first of these, a procedure like that of Sidis was followed. The cards used bore each of them one of the first ten letters of the alphabet, and they were held at such a distance that the observers could barely detect the letter as a faint spot on the card. The observer was told that the letter on the card was one of the letters from A to J. In a large number of experiments, then, the probability would be that one-tenth of the guesses at the letters would be correct, if the guessing was not subject to any influence.

In the second series, the conditions were rendered more difficult by enclosing the letters in rectangles. It was thus made almost impossible to be guided in guessing by the general bulk of a letter,—as, for instance, B might in the first series be distinguished from I.

In the third series, the letters were whispered instead of being shown on cards. It was found necessary in this series to rule out every experiment where the observer heard the slightest sound from the whispering. If anything at all were heard, it often caused the letter to be recognized, especially such letters as C, G, H and J. The experimenter would therefore give the observer a 'Ready' signal, and then whisper the letter so softly that no sound whatever could be heard at the distance at which the observer sat.

The following tables show the results of these series:

Series I. Printed letters without enclosing rectangles.

Observer.	No. of Experiments.	Per cent. of correct guesses.
Str.	100	38
S.	100	32
M.	100	38
R.	200	33
Si.	126	48
W.	310	24
H.	200	51
B.	50	16
L.	50	22
P.	50	16
Bo.	100	55
E.	100	74
Li.	330	46

Series II. Printed letters with enclosing rectangles.

Observer.	No. of Experiments.	Per cent. of correct guesses.
Str.	100	37
S.	100	21
Si.	100	24
W.	240	63
P.	50	18
L.	50	34
B.	50	8
E.	200	67

Series III. Whispered letters.

Observer.	No. of Experiments.	Per cent. of correct guesses.
Str.	600	31
S.	400	19
M.	100	12
H.	400	16
L.	250	10
W.	200	39
Bo.	100	13
E.	106	16
Si.	200	24
P.	200	23

From these tables it appears that only one observer, B. in Series II, ever fell below 10 per cent. of correct guesses, the proportion required by mere chance, and that in this case the number of experiments was so small that the law of probability would hardly apply. In Series I, some of the observers, for instance E., Bo., H., and Si., obtained so high a percentage of right guesses as to suggest that they must have been almost able to read the letters, although they declared in good faith that they could not. The possibility of reading in the ordinary sense was much less in the second series, yet two of the observers, E. and W., guessed right in more than half of the cases. In Series III, where the letters were whispered, since every case in which the observer heard the slightest sound of the whisper was ruled out, the conditions should have made ordinary perception impossible. It is noteworthy that although no observer fell below 10 per cent. of right guesses in this series, L., M., and Bo. had but little above that amount. Yet Str. and W., with 31 and 39 per cent. respectively, show that their guessing must have been somehow influenced quite decidedly in the right direction, and the others also give evidence of such influence, though in a less marked degree.

Our results, then, confirm, on the whole, those of Sidis and show that with certain observers at least judgments may be influenced in the direction of correctness when the observer is unconscious that any such influence is present. Whether this effect is due to a secondary self with superior senses, as Sidis believes, or to a physiological result of the stimulus, too slight to affect consciousness on its own account, as it were, is a question to which our experiments can furnish no answer.

VIII. A STUDY OF ERRORS IN THE PERCEPTION OF MOVEMENT ON THE SKIN

By RUTH HOAG, JULIA A. LINDEMANN, and M. F. WASHBURN

The object of this study was to test the generally accepted statement that movement and rest can be correctly discriminated when the direction of the movement is not accurately perceived, a fact which Külpe explains by the law that "general or abstract names are more easily reproduced than concrete." Movements of very slight extent on the part of a tactual stimulus were employed. The observers sat with the left arm extended on a table, and with their eyes closed. An ink-dot was made on the volar side of the wrist, about 5 cm. above the hand. Four other dots were placed at distances of one mm. from the first, one each in the central, peripheral, radial, and ulnar direc-